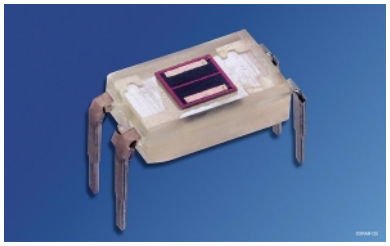
Silizium-Differential-Fotodiode
Silicon Differential Photodiode

BPX 48
BPX 48 F



BPX 48

BPX 48 F

Wesentliche Merkmale

- Speziell geeignet für Anwendungen im Bereich von 400 nm bis 1100 nm (BPX 48) und bei 920 nm (BPX 48 F)
- Hohe Fotoempfindlichkeit
- DIL-Plastikbauform mit hoher Packungsdichte
- Doppeldiode mit extrem hoher Gleichmäßigkeit

Features

- Especially suitable for applications from 400 nm to 1100 nm (BPX 48) and of 920 nm (BPX 48 F)
- High photosensitivity
- DIL plastic package with high packing density
- Double diode with extremely high homogeneousness

Anwendungen

- Nachlaufsteuerung
- Kantenführungen
- Weg- bzw. Winkelabtastungen
- Industrieelektronik
- „Messen/Steuern/Regeln“

Application

- Follow-up control
- Edge control
- Path and angle scanning
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
BPX 48	Q62702-P17-S1
BPX 48 F	Q62702-P305

Grenzwerte
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}; T_{stg}	– 40 … + 80	°C
Löttemperatur (Lötstelle 2 mm vom Gehäuse entfernt bei Lötzeit $t \leq 3$ s) Soldering temperature in 2 mm distance from case bottom ($t \leq 3$ s)	T_S	230	°C
Sperrspannung Reverse voltage	V_R	10	V
Verlustleistung, T_A = 25 °C Total power dissipation	P_{tot}	50	mW

Kennwerte (T_A = 25 °C) für jede Einzeldiode
Characteristics (T_A = 25 °C) per single diode system

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		BPX 48	**BPX 48 F**	
Fotostrom Photocurrent V_R = 5 V, Normlicht/standard light A, T = 2856 K, E_V = 1000 lx V_R = 5 V, λ = 950 nm, E_e = 0.5 mW/cm²	I_P I_P	24 (≥ 15) –	– 7.5 (≥ 4.0)	µA µA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	900	920	nm
Spektraler Bereich der Fotoempfindlichkeit S = 10% von S_{max} Spectral range of sensitivity S = 10% of S_{max}	λ	400 … 1150	750 … 1150	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	1.54	1.54	mm²
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$	0.7 × 2.2	0.7 × 2.2	mm × mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H	0.5	0.5	mm

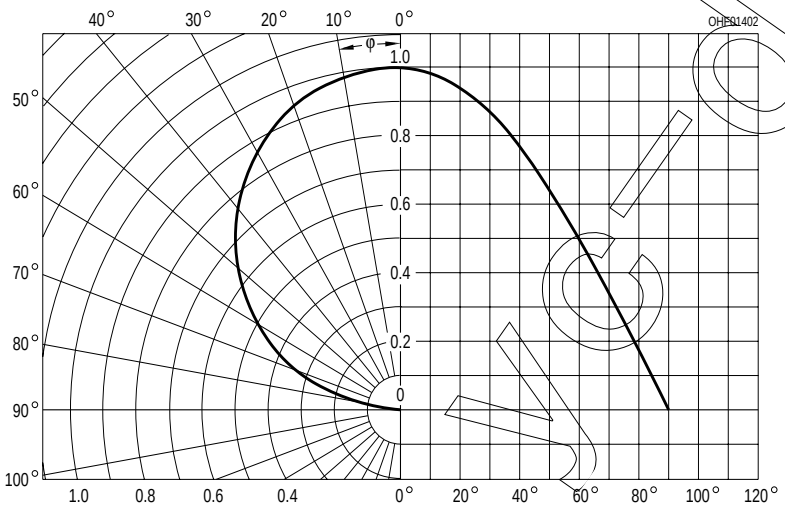
Kennwerte (T_A = 25 °C) für jede Einzeldiode
Characteristics (T_A = 25 °C) per single diode system (cont'd)

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		BPX 48	**BPX 48 F**	
Halbwinkel Half angle	φ	± 60	± 60	Grad deg.
Dunkelstrom, V_R = 10 V Dark current	I_R	10 (≤ 100)	10 (≤ 100)	nA
Spektrale Fotoempfindlichkeit Spectral sensitivity λ = 850 nm λ = 950 nm	 S_λ S_λ	 0.55 –	 – 0.65	 A/W
Max. Abweichung der Fotoempfindlichkeit der Systeme vom Mittelwert Max. deviation of the system spectral sensitivity from the average	ΔS	± 5	± 5	%
Quantenausbeute Quantum yield λ = 850 nm λ = 950 nm	 η η	 0.8 –	 – 0.95	Electrons Photon
Leerlaufspannung Open-circuit voltage E_v = 1000 lx, Normlicht/standard light A, T = 2856 K E_e = 0.5 mW/cm², λ = 950 nm	 V_O V_O	 330 (≥ 280) –	 – 300 (≥ 280)	 mV mV
Kurzschlußstrom Short-circuit current E_v = 1000 lx, Normlicht/standard light A, T = 2856 K E_e = 0.5 mW/cm², λ = 950 nm	 I_{SC} I_{SC}	 24 –	 – 7	 µA µA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent R_L = 1 kΩ; V_R = 5 V; λ = 850 nm; I_p = 20 µA	t_r, t_f	500	500	ns
Durchlaßspannung, I_F = 40 mA, E = 0 Forward voltage	V_F	1.3	1.3	V
Kapazität, V_R = 0 V, f = 1 MHz, E = 0 Capacitance	C_0	25	25	pF
Temperaturkoeffizient von V_O Temperature coefficient of V_O	TC_V	– 2.6	– 2.6	mV/K

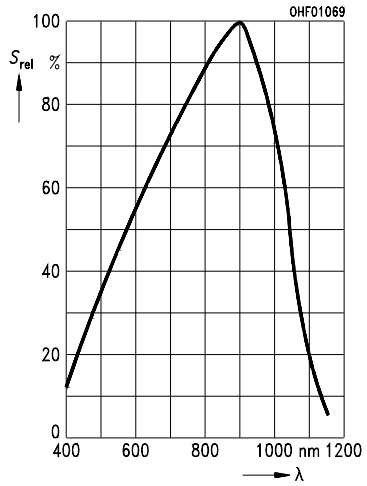
Kennwerte (T_A = 25 °C) für jede Einzeldiode
Characteristics (T_A = 25 °C) per single diode system (cont'd)

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		BPX 48	**BPX 48 F**	
Temperaturkoeffizient von I_{SC} Temperature coefficient of I_{SC} Normlicht/standard light A λ = 950 nm	 TC_I TC_I	 0.18 –	 – 0.2	 %/K %/K
Rauschäquivalente Strahlungsleistung Noise equivalent power V_R = 10 V, λ = 950 nm	NEP	1.0×10^{-13}	1.0×10^{-13}	$\frac{W}{\sqrt{Hz}}$
Nachweisgrenze, V_R = 10 V, λ = 950 nm Detection limit	D*	1.2×10^{12}	1.2×10^{12}	$\frac{cm \times \sqrt{Hz}}{W}$

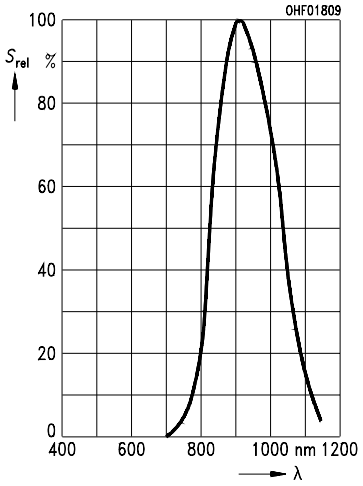
Directional Characteristics
$S_{rel} = f(\varphi)$



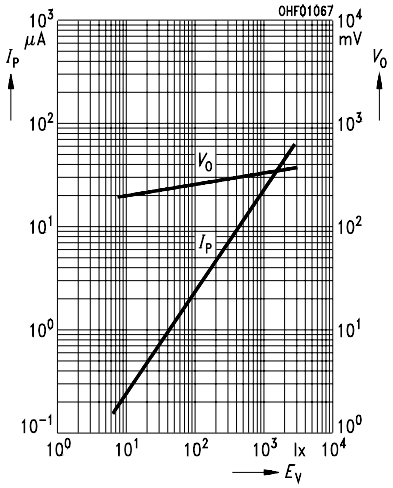
Relative Spectral Sensitivity
BPX 48 $S_{rel} = f(\lambda)$



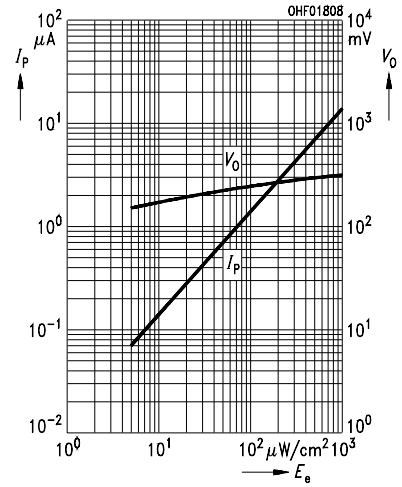
Relative Spectral Sensitivity
BPX 48 F $S_{rel} = f(\lambda)$



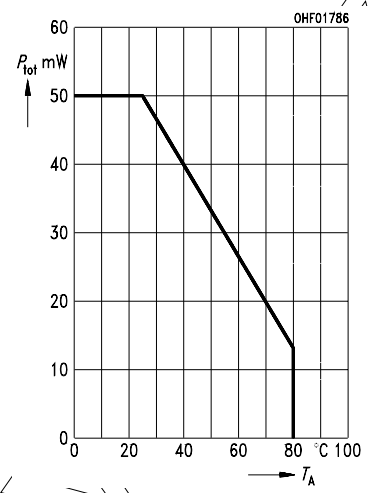
Photocurrent $I_P = f(E_v)$, V_R = 5 V
Open-Circuit Voltage $V_O = f(E_v)$
BPX 48



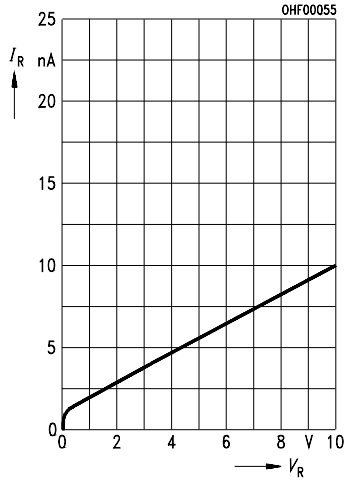
Photocurrent $I_P = f(E_e)$, V_R = 5 V
Open-Circuit-Voltage $V_O = f(E_e)$
BPX 48 F



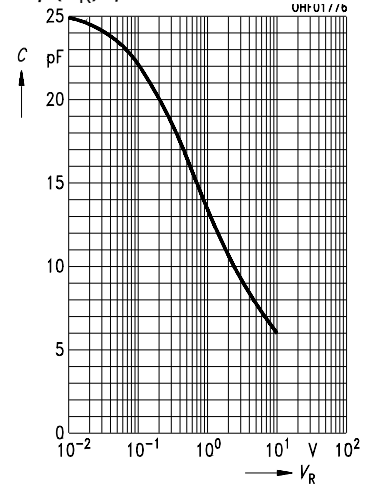
Total Power Dissipation
$P_{tot} = f(T_A)$



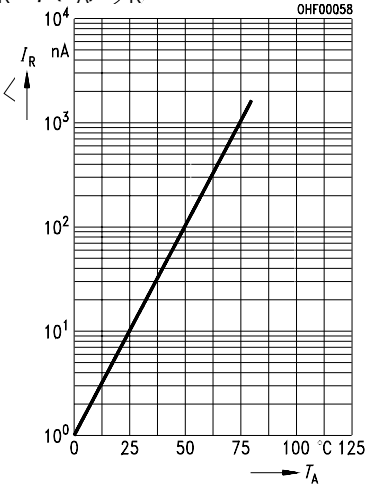
Dark Current
$I_R = f(V_R)$, E = 0



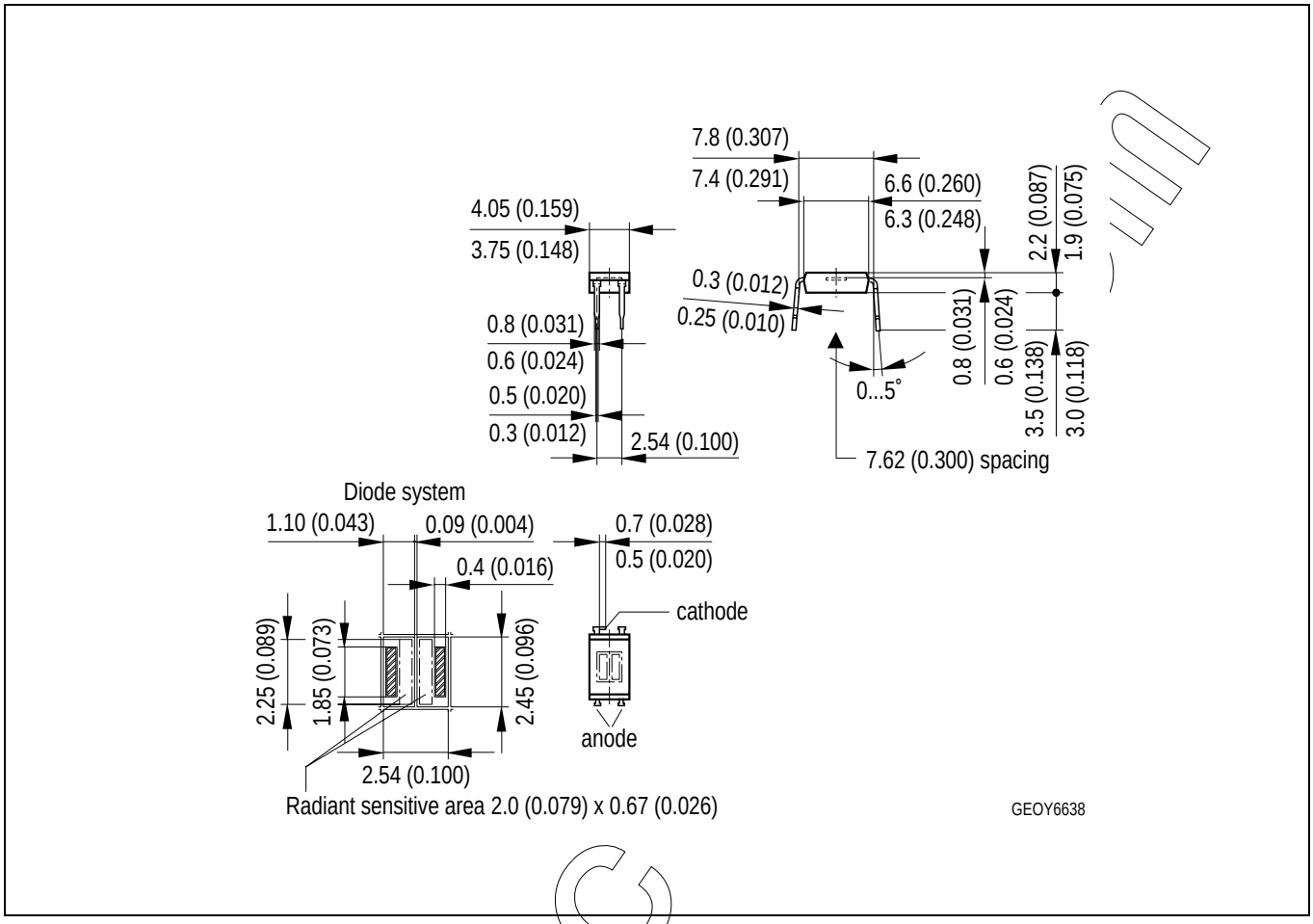
Capacitance
$C = f(V_R)$, f = 1 MHz, E = 0



Dark Current
$I_R = f(T_A)$, V_R = 10 V



Maßzeichnung
Package Outlines



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Attention please!

The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] , may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.

[1] A critical component is a component usedin a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

[2] Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.